

**REPORT ON FAO EXPERT CONSULTATION ON INTERACTION OF PACIFIC
TUNA FISHERIES (*Shimizu, Japan, 23-31 January 1995*)**

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I was invited, as an expert, to present a contribution paper on Atlantic tuna fisheries interactions and to participate in the meeting of the FAO Expert Consultation on Interaction of Pacific Tuna Fisheries, held in Shimizu, Japan, on January 23-31, 1995. All travel costs and expenses were borne by the FAO. Although my participation was in the capacity of an expert, I feel I ought to present a summary report of the meeting, given that I was also representing the ICCAT Secretariat. The formal Report of the meeting, including all the contribution papers is available from the FAO.

The Agenda (with the names of moderators and chairman) is attached as Appendix 1, the list of the contribution papers as Appendix 2. The FAO Project on Cooperative Research on Interaction of Pacific Tuna Fisheries was established using the Japanese contribution to the FAO Trust Fund, and held its first session in 1992 in Noumea. This was the second meeting. The initial objective was to clarify the fisheries interactions, principally between coastal fisheries and offshore fisheries, so that a better understanding could be obtained before progressing to the overall stock assessments of tuna and tuna-like fishes in the Pacific.

The meeting was attended by over 60 scientists involved in tuna research, from 18 countries and 6 international organizations.

Under Agenda Item 4, fisheries interactions were categorized in various ways (between species, between fisheries, between stages of life cycles, between areas and time and by economic and social factors). Under Agenda Item 5, existing fisheries interactions were examined by species. Under Item 6, several reports intending to quantify the interactions were presented.

Various problems relating to the studies were examined under Item 7. It was noted that all the information used for the population assessments have an input into fisheries interactions, while the knowledge obtained from the studies carried out on interactions were essential for stock assessments. Tagging data, and particularly of archival tag information were considered essential for the studies. It was also noted that an understanding of the interactions is an essential basis for advice on management decisions.

Recommendations were considered under Item 8. General topics of unresolved problems were categorized into five areas; (1) catch and effort data, (2) biology and ecosystem, (3) tag and recapture, (4) alternative methodologies, and (5) modelling interactions. Well designed tagging studies were considered to offer the most reliable information regarding the level of interaction, but it was felt that such information needs to be complimented by reliable statistics of catch and effort data and placed in an integrated research framework. FAO was asked to seek additional funding for the continuation of the Project.

The FAO World Tuna Atlas project and the FAO program for the modelling of the interactions were also discussed independently during the session. The Consultation recognized that the World Atlas project had already been realized for the east Pacific by I-ATTC and for the Indian Ocean by IPTP. The SPC, in collaboration with I-ATTC, will cover the rest of the Pacific in the near future. The Consultation was informed that ICCAT had declined the contract with the FAO to carry out the program for the Atlantic, for 1995. The FAO was requested to provide guidelines for a unified presentation format.

My personal impression from the meeting was that the interaction of fisheries takes place at a much lower level in the Pacific, since the fishing of most tuna stocks is less intense in the Pacific than in the Atlantic. Also the lack of an organization which is responsible for Pacific stock assessments makes it difficult to evaluate tuna stocks on an ocean-wide basis. This seems to be the main reason for coordinated research starting on aspects of fisheries interactions rather than on stock assessments.

In the Atlantic, most of the stocks have been highly exploited and the importance of fisheries interactions has been recognized. While stock assessments are carried out on an ocean-wide basis, the interactions have already been taken into account. The management measures taken by ICCAT also take these aspects into consideration. Nevertheless, knowledge is far from complete and much more work needs to be done before a full understanding of interactions and their effects on assessments can be reached.

**SECOND FAO EXPERT CONSULTATION ON INTERACTIONS
OF PACIFIC TUNA FISHERIES**

Shimizu, Japan
23-31 January 1995

AGENDA (Draft)

Agenda Item 1. Opening of the Consultation. (Jan. 23)

Moderator : Richard Shomura
Rapporteur : David Ardill

Agenda Item 2. Adoption of the Agenda and Announcements on Logistic Arrangements and Other Preliminary Matters. (Jan. 23)

Moderator : Richard Shomura
Rapporteur : David Ardill

Agenda Item 3. Background Information and Objectives of the Consultation. (Jan. 23)

Moderator : Richard Shomura
Rapporteur : David Ardill

Papers to be presented :

- 1/3 (*) J. Majkowski - FAO's project on "Cooperative Research on Interaction of Pacific Tuna Fisheries" and the associated FAO Expert Consultations.
2/3(*) R. Shomura - Common themes in the Proceedings of the First Consultation on Interactions of Pacific Tuna Fisheries.

Agenda Item 4. Facets and Types of Tuna Fisheries Interactions. (Jan. 23)

Moderator : Gary Sakagawa
Rapporteur : Paul Callaghan

Papers to be presented :

- 2/4(*) P. Kleiber - Types of tuna fisheries interactions.
3/4(o) P. Miyake - Multi-species tuna fisheries and their implications for fisheries interactions.
7/4(*) T. Kingston - Overview of biological, economic, social and political concerns related to interactions of Pacific tuna fisheries.

- 8/4(o) N. Barut - The tuna fisheries interactions of the ASEAN countries: Problems and needs.
6/4(o) J. Hampton - United Nations Conference on Straddling Fish Stocks and Highly Migratory Fish Stocks : Summary of developments and relevance to the FAO Consultation on Interaction of Pacific Tuna Fisheries.
5/4(*) R.S. Shomura, R.F. Harman and G. Sakagawa - Human interactions in tuna fisher management.

Agenda Item 5. Review of Studies on Tuna Fisheries Interactions. (Jan. 23-26)

Moderator : Richard Shomura
Rapporteur : Jim Ianelli
Gary Sakagawa
Bill Bayliff

Papers to be presented :

GENERAL METHODOLOGY

- 2/5 (*) M. Bertignac - A simulation model of tagging experiments of yellowfin in the Western Indian Ocean.
3/5 (**) W.S. Hearn and A. Mazanov - Interactions among fisheries in separate grounds: A tag-recapture method.
19/5 (**) P. Kleiber - Formulation of model for studying interactions of yellowfin tuna fisheries in the western Pacific.

TECHNOLOGY

(no contributions)

DATA INFORMATION

- 1/5(o) W.H. Bayliff - An indexed bibliography of papers on tagging of tunas and billfishes, supplement 1.
27/5 (**) A.J. Mullen, N. Barut, and B. Gafar - Examination of data relevant to tuna fisheries interactions in the Philippines and Indonesia.
34/5 (o) P.E. Chee and S.K. Khoo - Monitoring of the landings of Taiwanese tuna longliners at Penang Harbour.
25/5 (*) N. Miyabe, N. Barut and S. Chow - Species identification of small juvenile tunas in the catches of the surface fisheries in the Philippines.
38/5 (o) P. Miyake - Review of Atlantic researches on species interactions and statistical evaluation of multi-species sampling strategy used for tropical surface fishery, in terms of studying species interactions in the tropical Atlantic Ocean.
42/5(o) M. Barthelow, P. Ekstrom, and S. Moberley - Report generation and data display from the NMT archival tag: A software demonstration.

43/5(o) J. Sibert - Research on pelagic fisheries and tuna fisheries interaction at the University of Hawaii. (Verbal presentation)

44/5(o) (FFA) - FFA plans on tuna fisheries interaction research.

YELLOWFIN

6/5 (***) A.J. Mullen - A method to estimate movement from changes in estimated distributions, and then revise those estimates.

7/5 (***) A.A. Anganuzzi - An aggregate model of effort distribution.

8/5 (***) A.J. Mullen, A.A. Anganuzzi, R.D. Deriso, R.G. Punsly, and G.J. Walker - Interactions between mode of fishing and category of vessel in catches of tunas in the eastern Pacific tuna fishery.

9/5 (o) G. Compean and M. Dreyfus Leon - Interactions between the northern and southern yellowfin tuna (*Thunnus albacares*) fisheries in the eastern Pacific.

18/5 (o) G.T. Sakagawa - Western Pacific Yellowfin Tuna Research Group and tuna fisheries interactions.

28/5 (o) N. Barut - The relationship of Philippines yellowfin handline fishery to other local fisheries.

36/5 (o) T. Nishida - Influence of purse seine fisheries on longline fisheries for yellowfin tuna (*Thunnus albacares*) in the western Indian Ocean.

39/5 (o) A. Fonteneau and P. Kleiber - Atlantic yellowfin interactions.

SKIPJACK

5/5 (o) J.N. Ianelli - Studies on the population structure of skipjack tuna, *Katsuwonus pelamis*, in the central and eastern Pacific Ocean: Signs of interaction potential using environmental data.

30/5 (o) R. Rumpet - Stock assessment and interactions of skipjack and yellowfin tuna fisheries in the South China Sea off Sarawak, Malaysia.

17/5(***) J. Sibert, J. Hampton and D.A. Fournier - Skipjack movement and fisheries interaction in the western Pacific.

ALBACORE

20/5 (*) D. Fournier, J. Hampton and J.R. Sibert - A method for estimating fishery interactions from South Pacific albacore catch-at-length data using the SPARCLE model.

BLUEFIN

12/5 (o) P.K. Tomlinson - Movement of large bluefin tuna, *Thunnus thynnus*, in the North Pacific Ocean, as determined from the Japanese longline fishery, and implications regarding interactions between the fisheries of the western and eastern Pacific Ocean.

13/5 (o) W.H. Bayliff - Indices of abundance of northern bluefin tuna, *Thunnus thynnus*, in the eastern Pacific Ocean: A key element in assessment of the interactions of the fisheries for this species in the eastern and western Pacific

Oceans.

14/5 (o) W.H. Bayliff - Spawner-recruit and recruit-spawner relationships for northern bluefin tuna, *Thunnus thynnus*, in the Pacific Ocean.

40/5 (*) T. Polacheck, B. Hearn, and W. Whitelaw - Interactions between surface and longline fisheries for southern bluefin tuna based on recent tagging results: The importance of reporting rates.

41/5(*) S.C. Turner, C.E. Porch, V.R. Restrepo and G.P. Scott - Interactions of Atlantic bluefin tuna fisheries.

SMALL TUNAS

32/5 (o) T. Yenemori, H. Yanagawa, and Lui Yean Pong - Interactions of longtail tuna fisheries in the western part of South China Sea.

33/5 (o) R.B.B.R. Hassan - Interaction and migrations of small tuna in the South China Sea.

31/5 (o) S. Chullasorn - Interactions of Thai tuna fisheries: Problem, research and development.

NON-SPECIES-SPECIFIC

11/5 (o) S. Ortega-Garcia - Interactions between longline and purse seine Mexican fisheries on yellowfin tuna in the eastern Pacific Ocean.

10/5 (o) A. Muhlia-Melo - Interactions of sport and commercial fisheries of tunas and big pelagics in Mexican waters of the Pacific Ocean.

23/5 (*) C.F. Heberer - Recent developments in the tuna fisheries of the Federated States of Micronesia.

21/5 (***) J. Hampton, T. Lawson, P. Williams, and J. Sibert - Case study of fishery interaction in an Pacific island country: Kiribati.

26/5 (o) N. Naamin - The interaction between the artisanal and industrial tuna fisheries in the Eastern Indonesia with special reference to Sulawesi Sea.

29/5 (o) P.E. Chee - Tuna fisheries interactions in Malaysia.

35/5 (***) M. Bertignac and D. Ardill - Some interaction issues in the fisheries for tuna and tuna-like fishes of the Indian Ocean.

37/5 (***) A. Fonteneau - Interactions between tuna fisheries: A global review with specific examples from the Atlantic Ocean.

24/5 (*) Xi He and C.H. Boggs - Time series analysis on Hawaii's tuna fisheries: Do local catches affect local abundance?

Night Session:

Software Demonstration. (Jan. 25-26)

Moderator : John Sibert

Software to be presented :

- S. Moberly - Archival tag software.
- D. Fournier - High level language for statistical modeling.
- D. Ardill - Mapinfo software for fishery atlas preparation.
- P. Kleiber and J. Sibert - Interaction scenarios.

Small Group Discussion.

- Consideration of non-biological factors of tuna fisheries interaction. (Jan. 25)

Moderator : Paul Callaghan
Richard Shomura

- Atlas of tuna fisheries information.
- Joint session with software demonstration. (Jan. 26)

Moderator : David Ardill

Agenda Item 6. Extent of Tuna Fisheries Interactions. (Jan. 27-28)

- Paper presentation with whole group and plenary session for discussion.

Moderator : Ziro Suzuki
Rapporteur : Sachiko Tsuji

Papers to be presented :

- 37/5 (***) A. Fonteneau - Interactions between tuna fisheries: A global review with specific examples from the Atlantic Ocean.
- 2/6 (***) N. Bartoo - Summary of suspected interactions and the evidence for them.

Agenda Item 7. Unresolved Problems, and Research Guidelines for their Resolution. (Jan. 27-28)

- Paper presentation with whole group and plenary session for discussion.

Moderator : Chris Boggs
Richard Deriso
Rapporteur : John Hampton
Alejandro Anganuzzi

Papers to be presented :

- 1/8 (***) A.A. Anganuzzi - Some technical issues on the study of fisheries interactions.
- 1/7 (***) C. Boggs - Unresolved problems and questions from the First FAO Consultation on Interactions of Pacific Tuna Fisheries.
- 2/7 (***) J. Ianelli - Review and current status of information useful for addressing interactions of Pacific fisheries directed at tuna and tuna-like species.

Agenda Item 8. Other Discussions and Conclusions. (Jan. 30 PM)

Moderator : Richard Shomura
Rapporteur : David Ardill

Agenda Item 9. Adoption of Report. (Jan. 31 AM)

Moderator : Richard Shomura
Rapporteur : David Ardill

Agenda Item 10. Closing of the Consultation. (Jan. 31)

Note : o 10 min. presentation and 5 min. discussion.
* 20 min. presentation and 10 min. discussion.
** 30 min. presentation and 10 min. discussion.
*** 45 min. presentation and 15 min. discussion.